REMARKS/ARGUMENTS

Claims 1-15 and 21-43 have been withdrawn from consideration and now have been canceled without prejudice and in accordance with the previously asserted Restriction Requirement. Applicants expressly reserve the right to re-present these claims in a continuing application.

Claim 20 and 45-49 have been canceled in light of business considerations and to better focus the claims of the instant application to currently contemplated commercial embodiments of the invention. The cancellation is thus not in acquiescence to any rejection of record but rather for reasons unrelated to patentability. Applicants expressly reserve the right to re-present these claims in a continuing application.

Claims 16 and 19 have been revised to expressly indicate the inherent feature of the EA1 antigen, which was identified as a *B. anthracis* antigen. The claims have also been revised to include antibody fragments that bind the *B. anthracis* EA1 antigen, which is supported at least by content in paragraph 0014 of the instant application.

Claim 44 has been revised to conform it to revised claim 16.

New claims 50-58 have also been introduced. Support for these new claims is provided at least as follows:

New claim	Support
50	original claim 1
51	original claim 3
52	original claim 6
53	original claim 7
54	original claim 8
55	original claim 1
56	original claim 14
57	original claim 15
58	original claim 11

New claims 59-63 are related to claims 16-19, 44 and 50-58 as a subcombination to a combination. Specifically, new claims 59-63 are directed to antibodies (as subcombinations) that are wholly part of the kits (or combinations) of claims 16-19, 44, and 50-58. Accordingly, the searches of new claims 59-63 are co-extensive with the searches of claims 16-19, 44 and 50-58 because a search of the combinations encompassed by the latter claims must include a search of the subcombinations of claims 59-63. Support for new claims 59-63 is provided at least as follows:

New claim	Support
59	claim 16
60	claim 50
61	claim 51
62	claims 52 and 55
63	claims 56-58

New claim 64 is directed to a method of using the antibody of claim 59 and is thus supported thereby. Additional supported is provided at least in the last sentence of the abstract and paragraphs 0013, 0028, and 0029 of the instant application.

No new matter has been introduced, and entry of the above claims is respectfully requested.

Initial Remarks

The instant invention is based in part on the discovery that there are epitopes of the EA1 polypeptide that may be used to specifically identify *B. anthracis* apart from other organisms, such as *B. cereus* or *B. thuringiensis*. The discovery was based upon antibodies that bind epitopes found on *B. anthracis* and not on other *Bacillus* species (see for example, paragraphs 0036 to 0039 and Tables 1-4). The epitopes were identified as being present on the EA1 polypeptide of *B. anthracis*, and so the antibodies are described as binding the EA1 polypeptide.

The invention is not based, however, on the assertion that an antibody which binds the EA1 polypeptide will necessarily be specific to *B. anthracis*. The instant application does not make such an assertion, and the incorrectness of such an assertion is shown by Figure 4 in Mesnage et al., which describes how the EA1 polypeptide of *B. anthracis* is highly homologous to the OlpA polypeptide of *B. licheniformis* over its length (see Figure 4A) and particularly at the N-terminus (see Figure 4B). See also page 1149, last paragraph, in Mesnage et al.

Issue under 35 U.S.C. §112, Second Paragraph

Claims 16-19 and 44 were rejected under 35 U.S.C. §112, second paragraph as allegedly indefinite for "mere recitation of a name, i.e., EA1 to describe the invention". The statement of the invention stated that "[a]t the very least, the claims should recite the '*B. anthracis* EA1 antigen'."

Applicants have carefully reviewed this rejection and respectfully submit that it is misplaced because the claims are not construed in a vacuum. Instead, the claims are to be read in light of the specification without importing limitations therefrom. In the instant case, the specification clearly sets forth the identity and source of the EA1 antigen such that there is no ambiguity regarding its origin from *B. anthracis*. This reference to the specification is not an importation of a limitation therefrom, but rather the proper and acceptable interpretation of a claim feature in light of the specification. Given such a proper consideration of the specification, the skilled artisan would not be confused as to what is meant by the EA1 antigen as recited in the claims. Accordingly, this rejection is misplaced and may be properly withdrawn.

However, and because the identification of EA1 antigen as being that of *B. anthracis* is merely the explicit recitation of an inherent feature of the recited EA1 antigen, claims 16 and 19 have been revised to recite "EA1 antigen of *B. anthracis*". Applicants thus respectfully submit that this rejection may be withdrawn for the reasons provided above or the express recitation of an inherent feature.

Issues under 35 U.S.C. §112, First Paragraph

Claims 20 and 45-49 were rejected under 35 U.S.C. §112, first paragraph as allegedly failing to comply with the enablement requirement.

These claims have been canceled without prejudice as explained above and so this rejection may be properly withdrawn.

Claims 20 and 45-49 were rejected under 35 U.S.C. §112, first paragraph as allegedly failing to comply with the written description requirement.

Again, these claims have been canceled without prejudice as explained above and so this rejection may be properly withdrawn.

Issues under 35 U.S.C. §102 and 103(a)

Claims 16 and 44 were rejected under 35 U.S.C. §102(b) as allegedly anticipated by, or alternatively under 35 U.S.C. §103(a) as obvious in light of, Mesnage et al.

The statement of the rejection includes the assertion that antibodies directed against the EA1 antigen "are antibodies which bind to *B. anthracis*, but do not bind to *B. thuringiensis*" (see page 10 of the Action mailed November 5, 2004). On the same page, the statement further asserts that the Mesnage et al. "antibodies to the EA1 protein would be identical to Applicant's antibodies to the EA1 antibody, i.e. the antibodies are raised against the same antigen."

Moreover, on page 12 of the Action, it is asserted that "Mesnage teaches an antibody which specifically binds to this EA1 antigen. Therefore, said antibody would inherently not crossreact with any other species of *Bacillus* which do not possess this antigen, e.g. *B. thuringiensis* and *B. cereus*.

Applicants have carefully reviewed the statement of the rejection and the above quoted passages as well as the content of Mesnage et al. and respectfully submit that no *prima facie* case of anticipation or obviousness has been presented. Applicants believe a brief review of the content of Mesnage et al., followed by a review of the instant claims, would be helpful.

Mesnage et al. describes the production of rabbit **polyclonal** antibodies in sera against the EA1 polypeptide (see page 1154, left column, lower half). There is no description or indication that the polyclonal rabbit antiserum was specific for *B. anthracis*. To the contrary, and given the degree of similarity and identity between EA1 and OlpA as described by Mesnage et al. (see Figure 4 and page 1149, last paragraph, therein as described above), it would be expected that the polyclonal antiserum would also react at least with OlpA of *B. licheniformis*, another *Bacillus* species. Mesnage et al. provide no information regarding their **polyclonal** antibodies in relation to *B. thuringiensis* or *B. cereus*.

This disclosure by Mesnage et al. is in contrast to the instant application, which includes the description of antibodies that are specific for *B. anthracis* relative to *B. licheniformis* as well as *B. thuringiensis* and *B. cereus* (see paragraph 0039 and Tables 2-4 of the instant application).

The is also in contrast to the instant claims, which are not directed to just "an antibodies that bind EA1 antigen". Instead, the claims are directed to antibodies that bind EA1 antigen *and* are specific for *B. anthracis* but not *B. thuringiensis* (and *B. cereus* in the case of claim 44). The contrast is even greater with respect to claims 55, directed to a monoclonal antibody, because Mesnage et al. only disclose **polyclonal** antibodies in serum.

Based on the above, Applicants respectfully submit that the characterization in the instant statement of the rejection is in error. Specifically, there is no teaching, express or inherent, by Mesnage et al. that antibodies against EA1 would bind *B. anthracis* but not *B. thuringiensis*. Additionally, there is no basis to assert that the *B. anthracis* specific antibodies of the instant invention are identical to the **polyclonal** antibodies of Mesnage et al. Moreover, the disclosure of Mesnage et al. indicates that it is most probable that their **polyclonal** antibodies would also bind the OlpA polypeptide of *B. licheniformis* and so would <u>not</u> be specific for *B. anthracis*.

Based on the foregoing, Applicants respectfully submit that no *prima facie* case of anticipation exists and this aspect of the instant rejection may be properly withdrawn.

With respect to the allegation of obviousness in the alternative, Applicants respectfully point out that the instant rejection fails to provided any reason as to why, or how, an artisan of ordinary skill at the time of the invention would modify the **polyclonal** antibodies of Mesnage et al. to be a *B. anthracis* specific antibody of the invention. Without adequate motivation and guidance, why, and how, would that artisan prepare a diagnostic kit comprising such a *B. anthracis* specific antibody? Similarly, Mesnage et al. fail to provide any reason to prepare the monoclonal antibody or hybridoma features as present in the instant claims.

Moreover, Mesnage et al. would actually direct the skilled person away from the concept of modifying the disclosed **polyclonal** antibodies to be *B. anthracis* specific. This follows because the high level of homology between EA1 of *B. anthracis* and OlpA of *B. licheniformis* as taught by Mesnage et al. would have led the skilled person to expect that the antibodies in the Mesnage et al. **polyclonal** antisera would bind both EA1 and OlpA. Such antibodies would be cross reactive and so not be specific for *B. anthracis*. Mesnage et al. also fail to provide any reason for the skilled person to make such cross-reactive antibodies for use in a diagnostic kit. Thus the skilled person would not use the Mesnage et al. **polyclonal** antibodies, or the EA1 antigen, as a basis to generate *B. anthracis* specific antibodies.

Based on the above, Applicants respectfully submit that no *prima facie* case of obviousness exists and this aspect of the instant rejection may also be properly withdrawn.

Issues under 35 U.S.C. §103(a)

Claims 20 and 45-49 were rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Kearney et al. in view of Loomis et al.

As noted above, these claims have been canceled without prejudice and so this rejection may be properly withdrawn.

Claims 16-19 were rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Mesnage et al. in view of Loomis et al.

The statement of the rejection includes the assertion that Mesnage et al. teach "that a Western blot assay suggested that the antibodies were highly specific to B. anthracis and did not cross-react. See page 1150-1151". The statement also includes other assertions which seem to reflect the same view of the Mesnage et al. content as addressed above.

Applicants have carefully reviewed the statement of the rejection as well as the content of the cited documents and respectfully submit that no *prima facie* case of obviousness has been presented. As explained by the above review of Mesnage et al., they simply do not teach, suggest, or otherwise indicate an antibody that would be specific for *B. anthracis*. To the contrary, Mesnage et al. seem to suggest or teach that their antibodies would be cross-reactive at least with the OlpA polypeptide of *B. licheniformis*. Moreover, and with respect to the assertion based upon pages 1150-1151, Applicants respectfully point out that the discussion therein referred to the observation that polyclonal antibodies against EA1 antigen did not cross-react with SAP polypeptide. This is not, however, surprising given the low level of homology between EA1 and SAP as shown in Figure 4A by Mesnage et al.

The ability of polyclonal antibodies against EA1 to not cross-react with SAP provides no information or expectation, however, with respect to whether such antibodies against EA1 would be specific for *B. anthracis*. However, and given the high level of homology between EA1 and OlpA of *B. licheniformis*, it would be expected that the Mesnage et al. polyclonal EA1 antibodies would recognize and bind to OlpA on *B. licheniformis* and so not be specific for *B. anthracis*.

Accordingly, Mesnage et al. do not teach the *B. anthracis* specific antibodies as featured in the instant claims.

Loomis et al. do not remedy the above identified deficiencies of Mesnage et al. As indicated in the statement of the rejection, Loomis et al. is cited for its description of immunoassays and lateral flow detection systems.

But in the instant case, there are no *B. anthracis* specific antibodies taught, suggested, or otherwise indicated by either Mesnage et al. or Loomis et al. Therefore, there is no basis to assert that it would be obvious to include such antibodies in an assay or detection system

taught by Loomis et al. to arrive at the claimed invention. Accordingly, no *prima facie* case of obviousness is possible, and this rejection may be properly withdrawn.

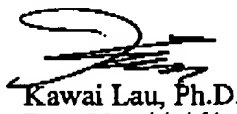
Furthermore, Applicants again point out that the invention is based in part on the discovery that there are antibodies which recognize epitopes of EA1 and that these antibodies are specific for *B. anthracis*. The invention includes the discovery that such antibodies can also be specific for *B. anthracis* relative to other *Bacillus* species, including *B. thuringiensis*, *B. cereus*, and *B. licheniformis*. This aspect of the invention reflects an unexpected discovery relative to the disclosure of Mesnage et al. and Loomis et al. Therefore, the instant claims, all of which include this feature of the invention, are non-obvious over these references.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance and an action to that end is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 858-350-6151.

Respectfully submitted,



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